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NAVAL POSTGRADUATE SCHOOL

Monterey, California



THESIS

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AN ANALYSIS OF COST SAVINGS
FROM THE PROPOSED PRIMUS CLINIC
AT PRESIDIO, MONTEREY CA

by

David Mark Anderse

December 1988

Co-Thesis Advisor:
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An Analysis of Cost Savings From the Proposed
PRIMUS Clinic at Presidio, Monterey CA

by

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ABSTRACT

In an effort to control rising hospital costs the U.S. Army has initiated a program to contract out primary care for its beneficiaries in selected areas. This initiative is the Primary Medical Care for the Uniformed Services Program. The U.S. Navy has its own contract initiative called NAVCARE, to save money and increase quality service to their beneficiaries. This thesis examined the potential cost savings in the PRIMUS Program at one specific clinic, Presidio of Monterey, CA. Future utilization and costs for this program are estimated and compared to projections of the current military health clinic. Findings for this analysis suggest that, given the different incentives of the two programs, the U.S. Army and Navy may not expect any cost savings from this contract initiative.

TABLE OF CONTENTS

I.	INTRODUCTION	1
A.	GENERAL	1
B.	OBJECTIVE OF THE RESEARCH	1
C.	RESEARCH METHODOLOGY	2
D.	ORGANIZATION OF THE THESIS	3
II.	THE PRIMUS PROGRAM	4
A.	PROBLEMS IN MILITARY MEDICINE TODAY	4
1.	Conflicting Roles in Military Medicine	4
2.	Increasing Costs of the Military Medical Department	5
3.	Dissatisfaction with Services	6
B.	DEFINITION OF PRIMARY CARE	7
C.	THE CHAMPUS PROGRAM	8
D.	THE PRIMUS PROGRAM	12
1.	Defining the PRIMUS Program	12
2.	Goals for PRIMUS	13
3.	Factors Affecting the PRIMUS Program	16
a.	Utilization Effects	16
b.	Cost Effects	18
c.	Contract Fixed Costs	19
III.	THE MODEL	20
A.	THE MODEL	20
B.	THE MODEL TERMS	21

C.	USING THE MODEL	22
IV.	THE DATA	25
A.	DATA REQUIRED FOR THE PRESENT MILITARY CLINIC	25
1.	Utilization	25
2.	Cost per Patient Visit	26
3.	Administrative Costs	27
B.	DATA REQUIRED FOR THE PRIMUS CLINIC	27
1.	Beneficiary Population	29
2.	Workload in the General Population	31
3.	Civilian Costs of Primary Care	32
4.	Contract Fixed Costs	33
C.	ADDITIONAL DATA	34
1.	CHAMPUS costs and workload	34
2.	Past PRIMUS Costs and Workload	35
D.	THE DATA COLLECTED	35
1.	Past Workload and Costs	35
2.	Beneficiary Population	37
3.	Workload in the General Population	38
4.	The Civilian Cost of Care	39
5.	Contract Fixed Costs	40
6.	CHAMPUS Costs and Workload	41
7.	Past PRIMUS Costs	41
E.	CLINIC CAPACITY	42
V.	THE ANALYSIS	44
A.	COSTS OF THE PRESENT SYSTEM	44
1.	Projecting Workload	44

2. Projecting Cost	46
3. Projecting Total Costs	47
B. COSTS OF THE PRIMUS CLINIC	48
1. Estimating Utilization	48
2. Estimating Cost per Patient Visit	50
3. Contract Fixed Costs	51
4. Estimating Total Costs	51
C. COST OF THE CHAMPUS SYSTEM	52
VI. CONCLUSIONS	53
APPENDIX: TABLES	55
LIST OF REFERENCES	67
INITIAL DISTRIBUTION LIST	68

LIST OF TABLES

I.	PRESIDIO OF MONTEREY CLINIC WORKLOAD FOR FY84 . . .	55
II.	PRESIDIO OF MONTEREY CLINIC WORKLOAD FOR FY85 . . .	56
III.	PRESIDIO OF MONTEREY CLINIC WORKLOAD FOR FY86 . . .	57
IV.	UCA COST AND WORKLOAD DATA FOR FAMILY PRACTICE CLINIC FOR FY84, FY85 AND FY86	58
V.	UCA COST AND WORKLOAD DATA FOR PRIMARY CARE CLINIC FOR FY84, FY85 AND FY86	59
VI.	SUMMARY OF FY88 ESTIMATES FOR FAMILY PRACTICE VISITS AT PRESIDIO OF MONTEREY CLINIC	60
VII.	SUMMARY OF FY88 ESTIMATES FOR PRIMARY CARE VISITS AT PRESIDIO OF MONTEREY CLINIC	61
VIII.	BENEFICIARY POPULATION OF FT. ORD COMMAND BY LOCATION AND CATEGORY	62
IX.	CIVILIAN AMBULATORY VISITS PER 1000 POPULATION BY AGE GROUP	63
X.	APPLYING NATIONAL SURVEY USAGE RATES TO THE FT. ORD COMMAND BENEFICIARY POPULATION	64
XI.	ESTIMATED PATIENT VISITS APPLYING CIVILIAN POPULATION USAGE RATES	65
XII.	ESTIMATED TOTAL COST OF PRESIDIO OF MONTEREY PRIMUS CLINIC USING MODEL EQUATION	66

I. INTRODUCTION

A. GENERAL

Military medicine has recently suffered from many problems. Shrinking resources and increasing workload has stretched manpower to its limits. The military now has problems staffing its hospitals adequately enough to insure quality care. Military medicine has also suffered from a lack of attention to providing quality care. Recent publicity concerning malpractice has tarnished its image of providing high quality care. Patient complaints have added to this tarnished image.

Military medicine is currently going through an evolution to solve its many problems. One of the solutions it is exploring is the contracting of various segments of its healthcare responsibilities. One of these contracting initiatives under current consideration is the PRIMUS system. This system contracts the delivery of primary care of the beneficiary population to a civilian healthcare provider.

B. OBJECTIVE OF THE RESEARCH

The objective of this thesis is to examine the cost savings potential of the PRIMUS system of healthcare

delivery. This will include the comparison of the cost of the present system to the estimated costs of the PRIMUS system. Since the CHAMPUS system of healthcare delivery is also being reformed, this thesis will compare PRIMUS and CHAMPUS costs.

In this era of shrinking resources in the military medical departments, a solution which does not provide cost savings may be unaffordable. If PRIMUS costs more than the present system, it may be more desirable not to pursue it.

C. RESEARCH METHODOLOGY

A model will be developed that will guide the data collection and analysis of this thesis, and will be expressed as a mathematical equation. Equation (1) will include costs of providing care, utilization of the clinic and administrative costs to arrive at an estimated total cost.

This thesis will estimate future costs based on past costs. It will compare the costs of the present system projected into the future, and estimate future costs based on U. S. Government surveys. Regression analysis applied to the historical costs of the present military system will be used to estimate the future costs of the military clinic system. Estimates for the PRIMUS clinic are based on information from the civilian healthcare system.

D. ORGANIZATION OF THE THESIS

Chapter I is the introduction to the thesis. Chapter II elaborates the present problems that the military medical departments are currently experiencing. It defines primary care, which is necessary to understand the scope of this thesis. Next, the problems with CHAMPUS and its current initiatives are examined. Finally, the PRIMUS program and its goals are defined, and the affects it has on utilization and costs of the present system of military healthcare are examined.

Chapter III explains the cost-estimation model used in this thesis. This model is used to predict the costs of the military and PRIMUS systems. The different systems which the military and PRIMUS work under are also elaborated and their effects on the model examined.

Chapter IV describes the data collected for the analysis. It explains the various factors affecting the use of the data. Some aspects of the model could not be used due to the limitations of the data collected. This is also examined in this chapter.

Chapter V deals with the analysis of the data, including the projection of military costs as well as the estimation of PRIMUS costs. Both Chapter IV and Chapter V refer to tables that are located in the back of this thesis. The conclusions of this thesis are found in Chapter VI.

II. THE PRIMUS PROGRAM

A. PROBLEMS IN MILITARY MEDICINE TODAY

1. Conflicting Roles in Military Medicine

Traditionally, military medicine has had three roles [Ref. 1: pp. 125-126]. Its first role is medical readiness to provide medical support in case of war. Its second role is the health maintenance of the active duty population. Its third role is providing health benefits to the dependents of active duty personnel, retired members and their dependents and survivors. This last role is an important incentive for continued military service of active duty personnel.

These roles are often conflicting, causing many problems for military medicine today [Ref. 1: pp. 125-126]. Medical readiness relies on specialized surgical care. To help in this function, the Navy has developed the Mobile Medical Augmentation Readiness Teams. These are highly specialized personnel skilled in casualty care, ready for assignment to scenes of conflict. Nevertheless, these personnel are also used to provide health benefits for retirees and dependents to stretch out scarce resources. The care of retirees and dependents do not provide the types of cases which train personnel for their combat casualty

role. Even providing health maintenance care to active duty personnel does not provide the case types necessary for this training.

Military bases are where most active duty members are concentrated. Medical treatment facilities located there provide easy access to medical care for these personnel. Retirees do not live in one area. This inhibits the delivery of medical care to most retirees by military treatment facilities. Medical care is an entitlement provided to all retirees. Nevertheless, the service medical departments must maintain their first two roles. Delivering healthcare to retirees has strained the resources of these service medical departments and CHAMPUS.

2. Increasing Costs of the Military Medical Department

The cost of providing medical care to beneficiaries has increased substantially during the early 1980's. In 1980 the total Department of Defense medical budget was about \$4.7 billion. This had increased to \$7.4 billion by 1984 [Ref. 2: p. 22], an increase of 63%. In an era of budget deficits, these increased costs have drawn considerable attention.

Past cost control attempts have not always succeeded. The Department of Defense issued a study in 1975 recommending a capitation budgeting system for the military healthcare system. The Departments of Defense, Health, Education, and Welfare and the Office of Management and

Budget jointly conducted this study. The number of people served by a facility forms the basis of a capitation budget. Workload presently forms the basis for medical department budgets. Facility budgets were therefore based on historical data. This recommendation attempted to align the funds available to the population served and thereby improve cost containment. In places where it was tried, it failed to achieve the desired results. Fiscal personnel were not relieved from the normal budgeting process. Additionally, budget decisions were still based on the historical budgeting process rather than the capitation process. The capitation system was in addition to the normal process, and did not affect budget decisions. The facility personnel therefore could not take the capitation system seriously. Capitation budgeting is a system of funding for a decentralized form of control. Local managers must be free to implement cost saving measures as they are identified. It failed because higher authority continued to exercise central control over the facilities.

3. Dissatisfaction with Services

Beneficiaries have become dissatisfied with the services provided by the military treatment facilities [Ref. 1: p. 122], which includes recent publicity about medical malpractice and physician incompetence. The medical departments have had to stretch scarce resources to meet its three roles, and as a result facilities have become

understaffed. This creates long waiting lines and appointment lead times to see medical practitioners. Some personnel of the clinics have actively discouraged beneficiaries from coming to clinics [Ref. 1: p. 122]. In many instances, these personnel also provided indifferent service. These problems are not completely due to medical personnel. Emergency rooms often become an after-hours clinic for those who cannot make immediate appointments or cannot come during regular hours. These problems have a negative impact on patient satisfaction of the present system.

Reconciling roles, reducing costs and increasing patient satisfaction are all problems currently facing the military medical departments. Cost increases have driven the Department of Defense to reform the healthcare system, and seek cheaper methods of delivering healthcare.

B. DEFINITION OF PRIMARY CARE

There are three main categories of medical care: primary, secondary and tertiary care. Defining these categories of care help to understand the solutions to the problems outlined above. Primary care is [Ref. 4: pp. 152-153]:

Medical attention to the great majority of ills, provided continuously over a significant period of time by the same appropriately trained individual (or team), who is sympathetic, understanding, knowledgeable, and

equipped, who is as capable of keeping people well as he is of returning them to health when they fall ill.

Secondary care consists only of curative services...ordinarily obtained on referral from the primary care level...it includes the services of specialists, whether the patient is ambulatory, or hospitalized...in a peripheral or district general hospital...Likewise, long-term care of chronic illness...is a part of secondary care....

Tertiary care includes the services of the "super-specialists" for rare disorders or the care of serious long-term conditions of relatively low frequency...at a regional medical center....

These definitions are broad, but useful for understanding what constitutes primary care, the level of care which PRIMUS is intended to provide. Most medical authorities agree on what procedures fall into each category of care, therefore, there is little confusion as to what constitutes these different types of care.

C. THE CHAMPUS PROGRAM

Active duty personnel must use military treatment facilities unless it is impractical. Retirees and family members use military facilities or see a civilian doctor [Ref. 5]. The Civilian Health And Medical Program for the Uniformed Services (CHAMPUS) is the program for those who use civilian doctors. CHAMPUS will pay part of the allowable fees on a percentage basis. This is usually 75% to 80% of the charged fees. This program also pays for care that is not available in the military treatment facilities. The Department of Defense administers CHAMPUS. Its costs do

not constitute any of the three services medical department budgets.

The cost of CHAMPUS has also been increasing in the early 1980's. In 1980, the CHAMPUS budget was \$710 million. By 1984, this had risen to \$1.2 billion [Ref. 2: p. 22], an increase of 60%. The CHAMPUS program is also under close scrutiny in this era of budget deficits. Dissatisfaction found in the military treatment facilities has also carried over to the CHAMPUS program. The civilian practitioners bill the patient directly. The patient then submits a claim to the CHAMPUS program for partial reimbursement. Therefore, the patient is responsible for paying the fees. Long delays have plagued the processing of these claims by CHAMPUS [Ref. 2: pp. 26-27]. This creates a financial burden on the users of the CHAMPUS program, which has lead to wide spread dissatisfaction with CHAMPUS.

Decentralized control has been a problem in reducing CHAMPUS costs. Military facilities issue certificates of nonavailability when they cannot provide the required care. CHAMPUS does not control the issuing of these certificates. CHAMPUS pays the bills resulting from these certificates, not the military departments. This mismatch of authority to issue certificates and the responsibility to pay the fees has resulted in increased costs for the Defense Department. A test to remedy this situation is under consideration for the Ft. Ord region [Ref. 5 and Ref. 6]. The Army commander

is to receive control over both the military budget and the CHAMPUS budget for that area. The commander would pay the CHAMPUS claims, and control all of the resources. He would be responsible for that regions medical care and accountable for the funds. This would combined the authority and accountability in one person. He will determine the best way to provide this care, and will have wide flexibility to perform this duty. Initiation of this experiment awaits the availability of CHAMPUS funds.

CHAMPUS is trying to find new ways of delivering healthcare to reduce costs [Ref. 5]. These new methods have focused on contracting for all or specific healthcare in a region. One experiment, using Health Maintenance Organizations, provides all the medical care needed by a patient for a fixed monthly payment. CHAMPUS pays for part of this monthly payment and the beneficiary pays the balance. Testing of this concept is currently under way in Portland, Minneapolis and Houston. Beneficiaries have indicated satisfaction with the service and benefits provided by this program. Nevertheless, the costs for these clinics are about the same as traditional CHAMPUS costs.

The Department of Defense is now thinking of reforming CHAMPUS in a fundamental way. This is the CHAMPUS PRIME or the CHAMPUS Reform Initiative [Ref. 7]. This reform will contract for health care by areas. Three large regions covering the continental United States will each have a

contractor. These contractors will provide at least the care now covered by CHAMPUS. For this service, each will receive a fixed payment. As this plan is now envisioned, a series of gateway clinics will provide primary care. This primary care will provide checkups and treatment for minor illnesses. Military treatment facilities, civilian hospitals or specialists who agree to work for the contractor will treat the serious cases. These gateway clinics will try to insure that military hospitals are not overcrowded. They will also provided a range of cases which will help to train physicians for wartime. To make a profit, the contractors will have to find ways to reduce the cost of the healthcare required in the contract.

If CHAMPUS PRIME is instituted, it is not clear what affect it will have on the military medical departments [Ref. 5]. The three traditional roles of military medicine will probably change. CHAMPUS PRIME does not relieve the military medical departments from having to provide the care if it can. It may, however, relieve some of the burden of serving the dependent and retired population. It may also reduce the cost of care for CHAMPUS. Competitive contracting reduces the cost of services to the government in most cases. The experiment with Health Maintenance Organizations has already shown that patient satisfaction will probably increase. CHAMPUS PRIME will not directly

bill the patient. Delays in reimbursement will not cause financial burden to CHAMPUS users.

CHAMPUS PRIME may increase crowding in already overcrowded military treatment facilities [Ref. 7]. Overcrowding will depend on how many patients use the new system and the ease of referring patients to civilian hospitals. CHAMPUS PRIME is not yet initiated, so is still too soon to determine if the new system will be cheaper than the present system of CHAMPUS.

D. THE PRIMUS PROGRAM

1. Defining the PRIMUS Program

The Army has begun to experiment with a concept similar to the gateway clinics under consideration by CHAMPUS PRIME. It is called the Primary Medical Care for the Uniformed Services (PRIMUS) program [Ref. 6 and Ref. 8]. It also contracts out services to provide primary care, and is funded by the service medical departments. In PRIMUS, a contractor provides primary care to the military beneficiary population. He treats minor illnesses and refers complex cases to the nearest military hospital. He provides all of the radiology, laboratory and pharmacology services necessary to deliver this primary care. In this way the contractor acts as a gatekeeper. Military hospitals will reduce the current primary care burden, and concentrate on the delivery of secondary and tertiary care.

The contractor is reimbursed on the basis of a fee per patient visit, with a set amount specified in the contract. This amount is tiered based on the number of patients seen. Reimbursement decreases at predetermined levels of usage for all the following visits. This takes advantage of the declining marginal fixed costs of the contractor as the number of patient visits increases. Repeat visits for the same illness do not count as another visit for reimbursement purposes. The patient can return to the clinic for the same illness until cured, and it will only count for one fee. The contract runs for a year, with a renewal clause for continuing the clinic with the present fees. If the contractor declines to renew, then the contract is put up for bid again. The quality of the care must conform to the accepted standards of the appropriate professional medical organizations.

Current plans call for twenty six Army and Navy PRIMUS clinics. NAVCARE is the equivalent Navy program. The first PRIMUS Clinic in Falls Church, Virginia, has just completed its first full year of operation. There are now eight such clinics operating in the United States.

2. Goals for PRIMUS

There are several goals for PRIMUS [Ref. 5, 6 and 8]. First, the clinic will act as a gatekeeper for the military treatment facility. PRIMUS will help control the

flow of patients to the military facilities, which is intended to relieve the overcrowding of military facilities.

Second, PRIMUS will enhance readiness. The gate keeping function of the PRIMUS and CHAMPUS clinics will accomplish this. Physicians working toward their specialty boards must have a wide range of cases to round out their training [Ref. 1: pp. 124-125]. Military teaching institutions will therefore still provide a wide range of services to beneficiaries. Other military treatment facilities will be able to specialize their care. Military facilities will only receive secondary and tertiary care cases. Secondary and tertiary care is more closely related to the type of care required in a war time situation. This gate keeping function, therefore, will both enhance current services by reducing utilization at military facilities and further physician training for their primary role as casualty care providers in war time by increasing emphasis on secondary and tertiary care. Even so, retirees and family members will continue to be the largest part of the population served by military medical care.

Third, PRIMUS will reduce the utilization of military treatment facilities. The military will see a reduced number of patients if the PRIMUS clinic takes most of the primary care cases.

Fourth, PRIMUS will improve the convenience and accessibility of the clinic for the patient. Most PRIMUS

clinics will open close to where the beneficiary population lives and not exclusively to military facilities, although this will not be possible in all cases. Increased usage of PRIMUS clinics will come with improved accessibility and convenience.

Fifth, PRIMUS will improve patient satisfaction. Provision of care is on a walk-in basis with no appointment necessary. Since civilian practitioners will provide the care, they will not have the stigma of recent bad publicity directed against military medicine. To increase revenue, the contractor must see more patients. He will retain enough physicians on staff to insure a maximum number of patient visits. He will have a monetary incentive to maximize patient satisfaction, and therefore increase usage and revenue. In the present military system there is no monetary incentive to maximize patient satisfaction. Patient satisfaction does not increase budgets. The first PRIMUS clinic has successfully enhanced patient satisfaction [Ref. 5].

Lastly, PRIMUS will bring CHAMPUS users into the military system. Military care is cheaper than CHAMPUS care at present [Ref. 2: p. 26]. Bringing this population into the military system through PRIMUS clinics will increase cost savings.

3. Factors Affecting the PRIMUS Program

In the current healthcare system, there are many factors which will have an effect on the PRIMUS program. These factors fall into two categories; utilization and cost effects. This section will discuss each of these factors, as well as the contract fixed costs.

a. Utilization Effects

Many of the factors which effect utilization are difficult to predict, and taken individually, they may be impossible to predict accurately. Nevertheless, utilization effects on costs can be accurately predicted.

Patient satisfaction is one factor affecting the expected usage of PRIMUS clinics. Beneficiaries of military healthcare can go to either the regular military facilities or the new PRIMUS clinics. The facilities which provide the best patient satisfaction will likely receive the most visits. The contractor has a monetary incentive to promote satisfaction with his services. The contractor receives a fee for each patient seen, and the more patients seen, the larger will be his total revenue from the contract. Military clinics lack this incentive. Military budgets are historical and the number of patients seen does not guarantee an increased budget. If the contractor can provide services to the satisfaction of the patients, then the utilization of the PRIMUS clinic will increase. Patient satisfaction is one of the goals of the PRIMUS program, and

the military hopes to achieve this goal by installing monetary incentives to increase satisfaction.

Patient sickness is also a factor affecting utilization. Clinics can expect high usage rates if the served population is not a healthy one. If an epidemic occurs, then usage will also rise. This will increase the number of visits to the contractors clinic. A healthy population will reduce the usage of a clinic. Increased health is a disincentive for the contractor, because it will reduce his revenue. Contractors will probably search for illness for which the patient may not have come to the clinic. Physical exams, routine medical tests and physician contact will provide ample opportunity to uncover further illness. This will increase the usage of the PRIMUS clinics, and the contractor's revenue will increase. Also, the professional ethics of the contractor and the medical practitioners will play a role. Ethics should insure that the priority will be to cure the patient.

The patient cure rate will also affect usage. A high cure rate on the first visit, will do two things for the contractor. The contractor will increase patient satisfaction, thereby increasing the number of patients returning to his clinic. Second, repeat visits for the same complaint do not count as a new visit. He can claim only one visit and one fee. Increasing the cure rate therefore reduces the number of repeat visits. Reducing the number of

repeat visits will increase the proportion of visits that will require a reimbursement fee, which will increase the contractors revenues.

Another factor is the size of the dissatisfied beneficiary population who do not use the present military facilities. This portion of the population is presently using CHAMPUS or providing itself with private insurance. Both of these options cost the beneficiary population in personal funds. If the contractor can provide services that can bring this population to the PRIMUS clinic, then his utilization will increase. Beneficiaries will save money, since the government will pay the total cost of the visit through PRIMUS.

b. Cost Effects

The basis for contractor reimbursement is the number of patient visits. The price set for reimbursement can therefore greatly influence the total cost of the PRIMUS clinic. One factor that influences this rate is the cost of primary care in the civilian community. If fees are much higher than in military facilities, then cost savings for fees may be in doubt. The reverse is also true. Competitive award of contracts should insure the lowest civilian fee cost to the government.

Another factor influencing the cost of reimbursement is the facilities the contractor will occupy. PRIMUS clinics collocated at military facilities will reduce

the contractor's fixed costs. The contractor will not bear the burden of building maintenance and rent, and may or may not pay for utilities. Without these costs, reimbursement rates should be lower. In most cases the contractor will provide his own facilities. The reimbursement rate will then reflect those fixed and variable costs.

c. Contract Fixed Costs

The fixed contract costs include those costs borne by the government. It does not include costs which are the contractor's responsibility. These costs include the salaries of the government personnel assigned to administer the contract. Also included are the costs of any building conversion which the government bears for the contractor's benefit.

III. THE MODEL

A. THE MODEL

Comparing the estimated total costs of the PRIMUS program and the military clinics will establish potential cost savings. Three factors will be used to predict the total costs of these clinics: the utilization of the clinic, the cost per patient visit, and administrative costs. Representing these factors in equation form will guide the comparison of the costs. Equation (1) will act as a guide in this thesis:

$$1) \quad C_1 \sum_{j=1}^n U + C_2 \sum_{j=1}^n U + A = T$$

where:

C_1 = Cost per Patient Visit for Utilization below Break Point.

C_2 = Cost per Patient Visit for Utilization at Break Point and above.

n = The Total Number of Disease Categories.

j = Each Category of Disease.

U = Utilization.

A = Government Administration Costs.

T = Total Costs to the Government.

The following section will explain each term in the above equation.

B. THE MODEL TERMS

Variable C_1 represents the cost per patient visit below the utilization break point and variable C_2 represents the cost per patient visit at and above the break point. The break point is the utilization level at which the reimbursement cost per patient visit starts to fall. The PRIMUS contract sets both costs and the break point. This break point reflects the reduced fixed costs of the contractor for each consecutive patient. This provides the model with a cost structure divided into levels of utilization, and represents the tiered reimbursement structure of the PRIMUS contract.

Utilization is the number of patients which a clinic treats in a specified length of time, represented by variable U . For a military clinic, it is the number of patients that count as part of its workload. Patients will require various types of care. Each of these types of care represents a category of disorder; subscript j represents each category of disorder that the clinic will see. Some categories could be gynecological, dermatological, pediatric, and so on, where n represents the total number of categories used in the model equation.

The variable A represents administrative costs. These include all costs which are not directly related to patient care. They include maintenance, utilities, and related

costs. For the PRIMUS contract, this will include the salaries of the governments contract administrators. Conversion costs of government facilities for contractor use is also included. Variable T represents the total costs to the government, whether for a PRIMUS or military clinic.

C. USING THE MODEL

Equation (1) helps to estimate total costs in two ways. First, it determines what data is necessary. Equation (1) suggests that utilization, patient visit costs and administrative costs are the data needed. Second, it states the relationship between the different types of data. Putting the data together as the equation dictates will produce the total cost of the clinic.

The system of medical care is an important consideration for using equation (1). A system which receives a fixed budget regardless of the number of patients will try to reduce utilization. Increasing the number of patients will not increase its budget so it will try to minimize workload. A system which receives funds based on the number of patients will endeavor to increase patient visits. This will provide more profit for the provider. This is the incentive system of the provider. The provider in this thesis refers to the specific system of medical care providing treatment. The two systems described will affect the utilization and cost terms in the equation differently.

In applying the model, the incentives must be consistently applied. Therefore, utilization for the military clinic can be historical use, whereas utilization for the PRIMUS clinic must come from the civilian healthcare system. The incentives of the civilian healthcare system is closer to that of the PRIMUS clinic. The cost of patient visits will be different for the military and PRIMUS clinics. Military costs are a product of the military pay system and government contracts for supplies, both lower in cost than civilian costs. The PRIMUS clinics will have to pay market salaries and market prices for supplies. Therefore, the civilian costs must be estimated from the current cost of civilian primary care.

The terms in the model are also affected by the health of a population. The better the health of a population, the less medical care it will need, which reduces utilization and total costs. The reverse is also true. Comparing two different populations must consider the underlying health of each.

Equation (1) will be applied twice in the estimation of total costs. First, the model will be applied to the present system of medical care. This application will assume that the present system will remain intact, and that there will be no significant changes in the incentives of the system or health of the population. The estimated total

cost of the present system will serve as the basis for comparison with the PRIMUS clinic.

Second, the model will be applied to the PRIMUS clinic system. Data from the civilian medical care system will form the basis for this estimate. The PRIMUS clinic incentive system is closer to the civilian medical care system than to the military system. This is the reason for the necessity of making two estimates. This estimate assumes there is no significant difference between the health of the military or civilian populations.

IV. THE DATA

Use of the Model in the previous chapter requires the collection and analysis of certain kinds of data. Breaking this required data into categories would give us utilization, patient visit cost and administrative data. Collecting this data in these categories estimates the costs of the present and PRIMUS clinics. The first section will determine the data requirements of the present clinic. The second section will determine the data requirements of the PRIMUS clinic. The third section will review the data needed for comparison with CAMPUS, and other PRIMUS data. The fourth section will review the data actually collected, and the fifth section will discuss clinic capacity.

A. DATA REQUIRED FOR THE PRESENT MILITARY CLINIC

Using historical data as the basis for projections is sufficient if the present system of medical care delivery is to remain. All of the incentives which are now in place will remain constant. The health of the population will also remain constant. Past data projects the trends in utilization, visit costs and administrative costs.

1. Utilization

Utilization is the number of patients which a clinic treats in a specified length of time. Projecting future

utilization will require a history of past visits over a significant length of time. Dividing the data into categories of care will increase the accuracy of the estimates. The place to obtain this data is the Uniform Chart of Accounts (UCA) of the facility. UCA is the military medical departments system of cost accounting. It takes workload data and compares it to the costs assigned to a department. Nevertheless, UCA represents workload as one gross number. The patient workload reporting system used by the Army supplements UCA data. This patient reporting system divides visits into general categories. Though instituted in 1980, UCA provides accurate data for only the past three years.

UCA follows the traditional organizational lines of a hospital. Each department in the hospital has its own account. Collected in each account are the costs and workload for that department. Often, however, a department performs its function at many different locations. If UCA does not distinguish between locations, it may be impossible to determine actual workload and costs for one particular local facility. This is important when comparing costs of a present clinic with its intended replacement.

2. Cost per Patient Visit

The patient visit cost is the pay received by the provider for a visit to a health care clinic. This thesis uses a physician visit for the cost. The supply of

physicians and the demand for health care in a free market determines the cost per patient visit. The cost of military health care, however, is only indirectly affected by supply and demand. Past military costs will serve to project future costs of patient visits if the military system continues.

UCA data is also the source of historical costs of a patient visit. In fact, for the present military health care system, this is the only place to find these costs. UCA takes the total costs assigned to a clinic and divides it by the total workload of that clinic, thus arriving at a cost per patient visit. This UCA data will serve as the basis for the projection of visit costs in the present system.

3. Administrative Costs

Administrative costs include those costs not directly related to patient care. These include utilities, salaries of administrators, maintenance of buildings, and other related costs. UCA is also the source for this information.

B. DATA REQUIRED FOR THE PRIMUS CLINIC

Due to the different incentive systems, historical data is not adequate for predicting PRIMUS costs. The population health is the same, since it will be the same population served, but the provider will be different. He will be

providing medical care under a different system of incentives, and he will be reimbursed based on the number of patients he treats. To increase profit, he must see more patients. The incentives for the military provider is to reduce the number of visits. This will have an affect on the total costs of the clinic that differs from what historical costs would estimate.

The estimates for the PRIMUS clinic then requires different data. To estimate the total costs of a contract clinic data is required from a comparable population. This comparable population must have an incentive system close to that system in the contract clinic, and it must also have a comparable state of health. Determining the characteristics of that population and system and applying them to the served population will best predict total costs. The closest comparable system of incentives is the civilian healthcare system. This thesis will assume that the state of civilian health is no different than the military's population. The civilian population and healthcare system will serve as the source of data for comparison.

The first piece of data needed is the size and characteristics of the beneficiary population. The beneficiary population are those people who are eligible for care in the military health system. It is the population now served by the present military clinic. Dividing the

beneficiary population into types of care needed obtains a better estimate of usage and costs.

Also required is the workload of the civilian system of care. Dividing this data into types of care and the utilization for each type of care refines the workload estimates.

Also needed are the costs associated with each type of care. The cost of this civilian care should closely coincide with the costs that the contract provider will require.

The last step is to estimate the contract fixed costs of the government. These costs are not the costs experienced by the contractor. Included in the contract cost are the contractor's fixed costs. The contract fixed costs are those costs bore by the government due to the contract itself. They include the salaries of the contract administrator and any conversion costs of government facilities for the contractor's benefit. These last costs need inclusion only if the contractor will occupy government buildings.

1. Beneficiary Population

Determining the beneficiary population that the military clinic serves is the first task. The model uses this data to help determine the utilization rates. It does this by estimating the amount of overall utilization it will

receive. Dividing the population into various groupings refines the accuracy of this data.

The population is the total number of beneficiaries served by the facility. Several problems arise in estimating this. One problem is that beneficiaries may be able to go to several facilities. This increases the difficulty of accurately determining beneficiary populations for a specific facility. The population at the Fort Ord facility does not overlap with any other military treatment facility [Ref. 6]. Nevertheless, there are three clinics in the Fort Ord command area.

Inclusion of civilians presents another problem. If injured on the job, the treatment facility provides care. The treatment facility may conduct physical exams where the job requires such exams. Civilians, therefore, constitute a small portion of the population, although they do not receive regular treatment at the military treatment facilities.

There are two systems which may help to determine the beneficiary population of a facility. These are the DEERS and RAPS systems. The purpose of DEERS is to determine eligibility of the person seeking care. Patients must demonstrate proof of eligibility before registration with DEERS. Patients must also register to receive care. RAPS is a system designed to distribute resources more equitably among military treatment facilities. Either of

these systems will provide beneficiary population figures. Nevertheless, the figures they arrive at are different.

Local commands use both of these systems to determine population figures. To supplement and check the accuracy of the systems they often have their own reporting system. Currently there is no entirely accurate method which determines beneficiary population.

Determining the size of the population for each category of care used in the model equation helps to calculate usage rate. For instance, the number of women in the population for gynecology services, or the number of children for pediatric services. General population figures will not suffice for the determination of these specific categories of special care.

2. Workload in the General Population

The present military healthcare system and the PRIMUS contractor face different incentive structures. Past workload data cannot accurately estimate the future utilization under this new incentive system. Applying the utilization rate in the civilian system to the beneficiary population provides a better estimate. To do this requires the utilization rate of primary care in the civilian population. Dividing the utilization rates into categories of care refines the estimates. The civilian equivalent of military primary care is ambulatory visits. This

information is available in national surveys performed by the federal government.

3. Civilian Costs of Primary Care

Civilian costs of ambulatory care influence the fees which the military will have to pay the contractor. Military costs of primary care only indirectly reflect the market costs of healthcare. Civilians will staff the PRIMUS clinic. The contractor must pay market prices for the physician's services providing that care. The contractor will also want to make a profit from the contract. The military does not make a profit. The costs of civilian primary care will help provide a rough estimate of the expected visit cost in the PRIMUS contract. Determining an exact cost must wait until the contract is open for bid. This will help estimate the cost term in the model.

A problem with estimating the PRIMUS cost per visit is that this information is proprietary. Surveys done by the U.S. Department of Health and Human Services average costs over a wide area. While these are helpful, costs may vary significantly over the area used in the surveys. The best information to have is the civilian costs for the specific PRIMUS clinic area. Civilian regional healthcare organizations, which help to plan healthcare delivery in that region, cannot provide exact figures. To do so is contrary to federal antitrust regulations. A telephone survey might be of value if the contacted party was willing

to provide this information. This is a decision of an individual provider and is not subject to federal regulations.

Civilian costs of care vary widely in a given area according to the organization to which the provider belongs. Costs for ambulatory visits at hospitals, private physician offices, and immediate care clinics vary significantly. Selecting the best equivalent costs for the PRIMUS clinic requires caution.

Also required is the cost per patient visit for different categories of care. This helps refine the estimate of total costs. These visit costs are then multiplied with the expected category usage rate to determine the cost of care for that category.

4. Contract Fixed Costs

These costs include the governmental costs for administering the contract. Also included are conversion and setup costs if the clinic is collocated in a military facility. These costs are relatively easy to estimate. Administration of the contract consists of the salary of the government person who works with the PRIMUS contract. Conversion and setup costs include those government costs agreed upon in the contract. Not included are those fixed costs paid by the contractor. The cost per visit agreed upon in the contract includes these costs. Adding these

costs to visit cost and utilization arrives at the total costs to the government.

C. ADDITIONAL DATA

A comparison of CHAMPUS costs with PRIMUS and military costs will better estimate the affect of a PRIMUS clinic. This requires data for the costs of CHAMPUS primary care. Data from the PRIMUS clinic now in operation refines the estimates in equation (1) for the contract clinic.

1. CHAMPUS Costs and Workload

Providing a cost competitive alternative to the CHAMPUS system is one goal of PRIMUS. Historical CHAMPUS workload and cost data of providing primary care help form a basis for comparison with PRIMUS costs. The contractor may be able to attract some of these people to his clinic by providing better service, because by using the PRIMUS clinic, CHAMPUS users will not pay a portion of the cost as they do now. Nevertheless, the CHAMPUS users must be within a convenient distance of the PRIMUS clinic. CHAMPUS beneficiaries use of the PRIMUS clinic is not certain and therefore, not predictable. The predicted usage rates used to estimate future PRIMUS costs will not include the CHAMPUS population, since it is difficult to estimate the size and characteristics of these beneficiaries and it is possible that they may not constitute a significant proportion of the users of the PRIMUS clinic.

2. Past PRIMUS Costs and Workload

At present, there is one PRIMUS clinic with one full year of operation. This provides an invaluable basis for estimating future costs and workload. Detailed information is, however, proprietary, so that information on past PRIMUS data in this thesis is approximate, and not specific. This thesis uses the past PRIMUS data to refine the estimates of cost and workload. To compete for the contract, providers usually provide bids as low as possible. Using the past PRIMUS cost data makes the adjustment for these low bids. Past workload PRIMUS data helps to confirm the usage expected in the contract clinic.

D. THE DATA COLLECTED

This section will discuss the data collected for the analysis. This collection proceeded as closely as possible to the guidelines set forth in the previous sections.

1. Past Workload and Costs

Reports submitted monthly by Presidio of Monterey (POM) to higher authority documents past military workload. These reports break the workload into general categories of care and types of patient, and provides the source of information for estimating the future workload of the present program. Dividing the workload into categories of care refines the estimate of future military clinic costs. Fiscal years (FY) 1984, 1985 and 1986 provide the basis for

these projections. Projections are for FY 88. October 1988 is the scheduled start date of the PRIMUS clinic. Tables 1, 2 and 3 show the workload of the POM Clinic for the past three years, respectively. These tables display the workload broken into categories used by the Army. The utilization element of the model will use this data. Applying the visit cost for each category to this workload estimates the future cost of the POM Clinic.

The POM Clinic does not have its own separate cost figures. This clinic is part of the Family Practice Clinic cost account. This presents a problem when estimating the true costs for the POM Clinic. The cost per patient visit for the Family Practice Clinic could apply to the workload of Presidio of Monterey. This would not provide a true cost, however, since it includes clinics other than POM. It also includes procedures which otherwise would not be in the Family Practice Clinic cost account. There are many types of procedures performed at POM as shown in Tables 1, 2 and 3. The two main ones are primary care and family practice visits. Primary care applies to sick call visits, which are the walk-in visits customary in the military. Family practice applies to the appointments made at Presidio of Monterey. Tables 4 and 5 provide the UCA data for the Family Practice and Primary Care Clinics for the whole region, respectively. The information in these tables will provide the estimate for the visit cost for these types of

visits at POM. Applying the visit cost in Tables 4 and 5 to the usage rates in Tables 1, 2 and 3 provides this estimate. This will provide the prediction of the true costs for the POM Clinic in the present system. Projecting these costs to FY 87 will provide a basis for comparing these costs with the scheduled PRIMUS clinic. Costs for the other procedures were not available and could not be estimated.

The different UCA cost accounts include all administrative costs for the present Ft. Ord command. Applying equation (1) to the present clinic will not require a separate estimate for administrative costs.

2. Beneficiary Population

The population data used in this thesis was derived locally. The total population estimate used is 81,477. The DEERS and RAPS figures are within 2,000 of this figure. This population estimate is accurate enough to use in the analysis. Breaking the regional population data into beneficiary category and location improves its usefulness. The region includes Ft. Ord itself, the POM Clinic and the Ft. Hunter Liggett Clinics. Table 8 displays this data by location and beneficiary category.

The beneficiary categories in Table 8 are active duty, retired, active duty dependents, retired dependents and civilians. This classification is not useful for determining usage rates for the various categories of care needed in the model. It is impossible to estimate, for

instance, the number of gynecology visits to expect from the beneficiary population categories used. The information necessary to do this was not available. This thesis, therefore, cannot divide equation (1) into various categories of care and compare these with the civilian population. This thesis instead uses readily available general ambulatory visits and costs to estimate total costs.

3. Workload in the General Population

This thesis uses workload figures from U.S. Department of Health and Human Services surveys [Ref. 9]. These surveys were conducted in 1977, but still provide adequate usage data. Table 9 summarizes the utilization rates for the general population, broken down by age categories, which represents ambulatory visits to physicians, equivalent to primary care in the military. Table 10 compares the military categories used in determining the beneficiary population with the categories used in the national survey. Averaging the national survey rates provides usage rates. For instance, the active duty population is equivalent to the 19 to 24 and 25 to 54 age groups. The rate used for the active duty population is then the average of the two applicable age groups in the national survey. For active duty personnel, the usage rate is the average of 3.464 and 4.046 visits per 1000 people. The usage rate obtained is 3.755 visits per person per year. A usage rate is calculated for each beneficiary category.

The retired category includes the age groups 55 to 64 and 64 and older. The retired family members include the same two age groups. Active duty dependents include the less than 6 and 6 to 18 age groups. The civilian category include the same age groups as the active duty category.

The usage rates in Table 10 are then applied to the beneficiary population in Table 8. This application uses only the population in the vicinity of the POM Clinic. The population at Ft. Ord will probably not use the future PRIMUS clinic, because it is far enough away to be inconvenient. The Ft. Ord population will likely use the hospital on that post, which will continue to provide primary care. The population at Ft. Hunter Liggett is not within a reasonable distance. Excluding these two populations from the usage calculation gives an expected population of 11,397. The POM population includes the personnel at the Naval Postgraduate School and their dependents. Table 11 uses this figure and applies the civilian rates in Table 10 to estimate patient visits for the beneficiary population. The derived estimate for utilization is 41,997 visits per year.

4. The Civilian Cost of Care

This thesis uses cost figures obtained from the U.S. Department of Health and Human Services Surveys [Ref. 9]. Comparing these figures with the costs of the Church Falls PRIMUS Clinic produces a cost estimate for the POM Clinic.

The figures for these costs are approximations, since this is proprietary information. These approximations are sufficiently accurate, however, for estimating costs.

5. Contract Fixed Costs

The PRIMUS contract includes some government fixed costs. They are the cost of converting the clinic for the contractor, and the cost of administering the contract. The contract administrative costs include the salaries of the government personnel assigned to the contract.

The contractor will use the government equipment already in place at the clinic. Conversion costs will cover replacing any of this equipment agreed to in the contract. Also included will be any modification of the facilities for contractor use, estimated at \$100,000.

To estimate the salaries of the government personnel, composite salary figures were used. This includes an estimate of the cost of salaries and benefits for each person of a given rank or GS grade. For the military, an O-3 will provide liaison with the contractor, using about 5% of his time for this purpose. With a composite salary of \$53,355 per year, the applicable amount is \$2,668. A GS-5 contract administrator will write the contract, requiring three months. To perform his contractual duties requires about 2% of his time. Applying a composite salary of \$16,310 to this time, this salary cost will be \$4323. Total estimated salary costs are \$6991 for

the first year of the contract. The total governmental fixed costs for the first year of the contract is \$106,991.

6. CHAMPUS Costs and Workload

Cost competitiveness with CHAMPUS is one goal of the PRIMUS program. Using CHAMPUS costs determine if this goal can reasonably be attained. In FY 84, comparable primary care visits for CHAMPUS users in the Ft. Ord area was 10,286. The combined cost to the government and the patient was \$108.26 per visit. In FY 85 these costs had risen to \$115.45, while \$123.07 is the projected cost for FY 86. These costs are higher than the costs for either the military facilities or the costs experienced with the PRIMUS clinics.

7. Past PRIMUS Costs

The experience at the Church Falls, Virginia PRIMUS Clinic guides parts of the analysis in this thesis. This thesis uses approximations since the information is proprietary.

The number of patient visits for the first year of operation was 70,369. The final cost per patient visit was approximately \$47. Of the patient visits, 57% were patients that were outside the original beneficiary population. These patients were from other military treatment facility populations. No estimate exists for the number of previous CHAMPUS users. It will take two or three years to see if

the PRIMUS program will have any affect on the CHAMPUS program at this location.

E. CLINIC CAPACITY

The capacity of the POM Clinic is an important consideration at this point. The contractor will have little opportunity to expand his physical facilities if they prove to be inadequate. The U.S. government owns the building the contractor will occupy.

There are a number of simple methods of estimating clinic capacity. Comparing the number of exam rooms with a clinic of known capacity provides an estimate of capacity. The PRIMUS Clinic at Church Falls, Virginia has 11 exam rooms, with an estimated capacity of 170,000 patients per year. The POM Clinic has 22 exam rooms. Applying this data provides a clinic capacity of 340,000 patients per year.

Another method is to estimate the number of patients a physician can see in a day. For this estimate, we assume that a doctor will spend twenty minutes on each patient. He can therefore see twenty four patients in a day. Also assuming there are two shifts of eight hours each 6 days and one on sundays. Using this as a basis for calculation, the capacity of the POM Clinic is 356,928 patients per year.

With these estimates, the capacity of the POM Clinic would not be a limiting factor. If all primary care visits

were sent to the PRIMUS clinic, they would still not reach the estimated capacity.

V. THE ANALYSIS

A. COST OF THE PRESENT SYSTEM

If the present system were to continue, then the incentives of the present system would remain the same. The basis for estimating future costs would be the historical costs. Linear regression analysis applied to past data will account for trends in workload and cost. Therefore, linear regression applied to historical costs estimates future costs. There are three parts in this section, based on the information being estimated: workload, costs and total costs.

1. Projecting Workload

Tables 1, 2 and 3 display the workload of the POM Clinic. This analysis uses only Family Practice Medicine and Primary Care visits. The present POM Clinic does not see other categories of visits.

A computer statistical software package called EPISTAT performed the regression analysis. The independent variable was a time trend for each quarter. The dependent variable was the number of visits. These two variables formed the basis of the regression analysis. Thus the trend equation to be estimated is $y = a + bx$, where y = number of

visits, x = time trend, and a and b are parameters to be estimated.

The system of Family Practice Medicine had changed at POM Clinic after FY 84. Therefore, for consistency, the regression analysis uses only the quarterly data for FY 85 and FY 86. Applying the workload for Family Practice at POM in these tables produces the regression equation:

2)
$$Y = 4851.929 + 101.0714 (X)$$

Y represents the number of visits and X represents the time in quarters. Applying this equation to the four quarters in FY 88, which is the first year of operation for the PRIMUS clinic, the number of projected visits are:

First quarter	=	6,166
Second quarter	=	6,267
Third quarter	=	6,368
<u>Fourth quarter</u>	=	<u>6,469</u>
Total for year	=	25,270

The system of Primary Care at POM has remained consistent Throughout FY 84, FY 85 and FY 86. Therefore, the regression equation uses all three years. Using the data in Tables 1, 2 and 3 produces the regression equation:

3)
$$Y = 3130.697 + 132.3671 (X)$$

Y represents the number of visits and X represents the time in quarters. Applying the equation in the same manner as the Family Practice visits, the projected number of visits are:

First quarter	=	5,381
Second quarter	=	5,513
Third quarter	=	5,646
<u>Fourth quarter</u>	=	<u>5,778</u>
Total for year	=	22,318

These estimates are the number of visits per quarter forecasted for the POM Clinic in FY 88.

2. Projecting Cost

Tables 4 and 5 display the costs of the Primary Care and Family Practice Clinics for the Ft. Ord command. These are, however, for the entire command area, not specifically for the POM Clinic. These tables were taken from the Ft. Ord UCA reports for their respective years, which does not break the data into various locations. Using the cost per patient visit data will estimate the cost for the POM Clinic. Applying the cost per visit to the total workload of POM will estimate its total costs.

Table 4 displays the UCA data for the Family Practice Clinic. It displays only the FY 85 and FY 86 data, since the clinic changed its procedures after FY 84. A regression analysis of the cost per visit estimates the cost per visit in FY 88. The independent variable is time in quarters and the dependent variable is the cost per patient visit. The regression equation is then:

$$4) \quad Y = 68.59858 - 3.021906 (X)$$

Y represents the cost per visit and X represents time in quarters. Using this equation, the forecasted estimates for the cost per visit for FY 88 are:

First quarter	= 29.31
Second quarter	= 26.29
Third quarter	= 23.27
<u>Fourth quarter</u>	<u>= 20.25</u>
Average for year	= 24.78

Table 5 displays the UCA data for the Primary Care Clinic at the Ft. Ord command. The table displays all three years since there were no changes in FY 84. Applying this data in the same manner as the Family Practice Clinic provides the regression equation:

5)
$$Y = 21.0397 + 1.735174 (X)$$

Y represents the cost per visit and X represents the time in quarters. Using this equation, the forecasted cost per visit for FY 88 are:

First quarter	= 50.54
Second quarter	= 52.27
Third quarter	= 54.00
<u>Fourth quarter</u>	<u>= 55.74</u>
Average for year	= 53.14

These workload and costs estimates are summarized in Tables 6 and 7. Table 6 summarizes the data for the Family Practice Clinic and Table 7 summarizes the data for the Primary Care Clinic.

3. Projecting Total Costs

Calculating the estimate for the total costs uses a simplified form of equation (1). The utilization is multiplied by the cost per visit to arrive at the total costs. No administrative term is necessary since UCA data includes these costs. Tables 6 and 7 include the total costs per year in their summaries. The total cost for

Family Practice visits is \$624,665.50. The total cost for the Primary Care visits is \$1,187,070.00. The sum of these costs yields the total cost of the POM Clinic, which is \$1,811,735.50. This is the cost which will be compared to the estimated cost of the PRIMUS clinic at POM.

B. COSTS OF THE PRIMUS CLINIC

As discussed in Chapter III, the PRIMUS clinic will not have the same incentives as the present clinic has. Therefore, applying the civilian cost of a visit to the present utilization will not provide an accurate estimate of total costs. Chapter IV outlined the data which was necessary to make an accurate estimate of PRIMUS clinic costs. This section will analyze this data and provide projected costs of the PRIMUS clinic.

1. Estimating Utilization

Table 8 displays the beneficiary population for the Ft. Ord command area [Ref. 6]. The Table divides the population into category of member and location. Ft. Ord will continue to provide primary care to its population, and they will likely use this facility. It is far enough away that it does create some inconvenience to use the POM Clinic. Ft. Hunter Liggett is too distant for its population to use the POM Clinic. Therefore, the utilization estimates will include only the POM population.

Table 9 displays ambulatory visits in the civilian healthcare system. Given the incentive system, this is the usage that the PRIMUS system of care can expect to receive. The age groups do not correspond to the category of members in Table 8. Table 10 was derived by applying the age categories in Table 9 to the category of members in Table 8. For example, the active duty population of Table 8 corresponds to the 19 to 24 and 25 to 54 age categories in Table 9. The average usage of these age categories is then applied to the active duty population. This produces a usage rate of 3.755 visits per 1000 people per year for the active duty population. The other beneficiary category usage rates are derived in the same manner. The retired population is equivalent to the 55 to 64 and 65 or older age categories. The same is true for the retired family members. Active duty dependents are the average of the less than 6 and 6 to 18 categories. Civilians are the same age categories as the active duty population. Table 10 displays the results of this averaging of usage rates.

Table 11 applies the population for the POM Clinic in Table 8 to the civilian usage rates in Table 10. The expected patient visits of 41,997 in Table 11 are the expected total visits for the POM Clinic for the civilian healthcare system.

2. Estimating Cost per Patient Visit

Chapter IV discussed the problems in estimating the expected cost per visit. The first problem is the difference in price between the contract and the civilian area of the clinic. The second problem is the differences between areas.

Using the previous PRIMUS experience at Church Falls, Virginia will solve the first problem. A telephone survey conducted before award of that contract estimated the cost of a visit in that area. This established an average visit cost of \$60.00. The final cost of a visit in the first year of that PRIMUS clinic was \$47.00. Therefore, the contract rate for the POM Clinic will be $\$47.00/\60.00 or .783 of the civilian rate in Presidio of Monterey. This assumes that the difference between the civilian rate and the contract rate is constant between regions.

Ref. 9 provides the visit cost for the Presidio of Monterey area. This is due to the problem in finding a visit cost rate, as discussed in Chapter IV. In 1977, the civilian cost of a visit in Virginia was \$27.00, while the cost of a visit in the Monterey area was \$32.00. This provides a difference of $\$32.00/\27.00 or 1.185. This assumes that the percentage difference between the regions has remained constant over time. With this information an estimate of the expected visit cost is now attainable.

Applying the difference between the regions estimates the civilian cost of the Monterey area. That is, $\$60.00 \times 1.185 = \71.10 . $\$71.10$ is the estimated present cost of a primary care visit in the Monterey area. Applying a known difference between cost in the civilian area and a contract cost estimates the contract price. That is, $\$71.10 \times .783 = \55.67 . $\$55.67$ is the expected cost of a primary care visit for the PRIMUS Clinic at POM.

3. Contract Fixed Costs

The contract fixed costs were determined in Chapter IV to be \$106,991.00.

4. Estimating Total Costs

With equation (1) as guidance and the information above, total cost may now be estimated. The utilization times the cost per patient visit plus the contract fixed costs will equal the total costs of the PRIMUS clinic. A sensitivity analysis is also desirable in this estimation, which will determine how sensitive the final estimate is as equation factors change. Table 12 displays the total cost estimate for the PRIMUS clinic. Utilization is varied over a narrow range to display the total cost of the PRIMUS clinic at each level. The estimated utilization is rounded to 42,000 primary care visits for convenience. The estimated total costs of the PRIMUS clinic is therefore \$2,445,131. This cost is higher than the projected cost of the military clinic for FY 88 of \$1,811,735.50. Therefore,

the PRIMUS clinic's costs is greater than the present clinic's costs. The sensitivity analysis shows that the cost of the PRIMUS clinic is still greater than the present clinic as utilization varies.

C. COST OF THE CHAMPUS SYSTEM

In the previous chapter, CHAMPUS visit costs were shown to be \$115.45. These costs are higher than the estimated and projected costs of either the military or PRIMUS clinics. There is no reason to believe that these costs will decrease over time. On the contrary, inflation in the healthcare industry will increase these costs. Since the visit costs are higher in CHAMPUS, the total costs of CHAMPUS are higher than the PRIMUS clinic's costs.

VI. CONCLUSIONS

It is possible to draw several conclusion from the cost analysis performed in this thesis. First, PRIMUS is not a cost saving alternative to the present system of military healthcare. The Army can expect to pay more for the care it receives in PRIMUS than in its own clinics. This is due to the difference in the incentive systems between PRIMUS and the present clinic.

The PRIMUS system as now envisioned is a cost savings alternative to the CHAMPUS system of care. The visit costs for CHAMPUS is already higher than those of PRIMUS. If the PRIMUS clinics are convenient to CHAMPUS users, then the Army can expect some CHAMPUS users to use military clinics. An added incentive is that PRIMUS will pay the total costs of the visit rather than a percentage as in CHAMPUS.

Third, PRIMUS will increase patient satisfaction and convenience to the patient, which is supported by the experience of the Fall Church, Virginia Clinic. A large percentage of the users of that clinic were not originally from the beneficiary population. These users were from other areas than around the clinic. Also, the first indications from patients using the clinic indicated a general satisfaction with the services [Ref. 6].

It is unclear if the PRIMUS system will improve readiness, act as a gatekeeper and reduce utilization of military clinics. Determination of these conclusions will have to await actual effect after PRIMUS has been in existence for a number of years.

APPENDIX

TABLES

TABLE 1: PRESIDIO OF MONTEREY CLINIC WORKLOAD FOR FY 84.

<u>Workload Category</u>	<u>Total 1st Qtr</u>	<u>Total 2nd Qtr</u>	<u>Total 3rd Qtr</u>	<u>Total 4th Qtr</u>	<u>Total Year</u>
Family Practice					
Medicine	7537	8185	8461	9284	33467
Primary Care	3089	3329	3364	3920	13702
Immunization	4507	4410	1874	2007	12798
Pharmacy	16301	17241	17412	18904	69858
Radiology	2417	2621	2666	2905	10609
X-Ray Films	2738	2899	3230	3418	12285
Phy Exams	240	340	309	278	1167
Other Exams	0	0	0	0	0
Pathology	22390	23014	25902	28368	99674
Total Family Practice and Primary Care	10626	11514	11825	13204	47169

Source: Silas B. Hays Army Hospital Medical Summary Report

TABLE 2: PRESIDIO OF MONTEREY CLINIC WORKLOAD FOR FY 85.

<u>Workload Category</u>	<u>Total 1st Qtr</u>	<u>Total 2nd Qtr</u>	<u>Total 3rd Qtr</u>	<u>Total 4th Qtr</u>	<u>Total Year</u>
Family Practice					
Medicine	4921	5108	5281	5196	20506
Primary Care	3697	3904	3998	4607	16206
Immunization	1434	1151	964	1107	4656
Pharmacy	19935	20870	21584	22820	85209
Radiology	1952	1821	1879	2322	7974
X-Ray Films	1417	1398	1384	1698	5897
Phy Exams	220	178	166	180	744
Other Exams	0	0	0	0	0
Pathology	0	0	0	0	0
Total Family Practice and Primary Care	8618	9012	9279	9803	36712

Source: Silas B. Hays Army Hospital Medical Summary Report

TABLE 3: PRESIDIO OF MONTEREY CLINIC WORKLOAD FOR FY 86.

Workload Category	Total 1st Qtr	Total 2nd Qtr	Total 3rd Qtr	Total 4th Qtr	Total Year
Family Practice					
Medicine	5327	5339	5401	5881	21948
Primary Care	4922	4328	4435	4300	17985
Immunization	6761	6633	6464	1365	21223
Pharmacy	17941	17923	17962	18000	71826
Radiology	1921	1518	1368	1725	6532
X-Ray Films	1484	1183	1049	1307	5023
Phy Exams	450	424	425	432	1731
Other Exams	1314	1259	1193	1204	4970
Pathology	0	0	0	0	0
Total Family Practice and Primary Care	10249	9667	9836	10181	39933

Source: Silas B. Hays Army Hospital Medical Summary Report

TABLE 4: UCA COST AND WORKLOAD DATA FOR FAMILY PRACTICE
CLINIC FOR FY 84, FY 85 AND FY 86.

<u>Fiscal Year and Quarter</u>	<u>Total Costs</u>	<u>Total Out Patient Visits</u>	<u>Cost per Visit</u>
FY 84, 1st Qtr	521825	9210	56.66
FY 84, 2nd Qtr	541883	10063	53.85
FY 84, 3rd Qtr	468551	9601	48.80
FY 84, 4th Qtr	780277	7725	101.01
FY 84, Total	2312536	36599	63.19
FY 85, 1st Qtr	531100	9085	58.46
FY 85, 2nd Qtr	632393	9261	68.29
FY 85, 3rd Qtr	555907	9868	58.33
FY 85, 4th Qtr	645962	8639	74.77
FY 85, Total	2365362	36853	64.18
FY 86, 1st Qtr	642499	16320	39.37
FY 86, 2nd Qtr	732372	16948	43.21
FY 86, 3rd Qtr	792407	15037	52.70
FY 86, 4th Qtr (est)	722426	16102	44.87
FY 86, Total	2889704	64407	44.87

Source: Silas B. Hays Army Hospital Uniform Chart of
Accounts Reports

TABLE 5: UCA COST AND WORKLOAD DATA FOR PRIMARY CARE
CLINIC FOR FY 84, FY 85 AND FY 86.

Fiscal Year and Quarter	Total Costs	Total Out Patient Visits	Cost per Visit
FY 84, 1st Qtr	841986	36616	23.00
FY 84, 2nd Qtr	950665	41564	22.87
FY 84, 3rd Qtr	910516	40178	22.66
FY 84, 4th Qtr	970001	39166	24.77
FY 84, Total	3673168	157524	23.32
FY 85, 1st Qtr	1213443	34920	34.75
FY 85, 2nd Qtr	1278955	37826	33.81
FY 85, 3rd Qtr	1380625	40537	34.06
FY 85, 4th Qtr	1405606	35663	39.41
FY 85, Total	5278629	148946	35.44
FY 86, 1st Qtr	1153814	30671	37.62
FY 86, 2nd Qtr	1172415	31288	37.47
FY 86, 3rd Qtr	1143769	29104	39.30
FY 86, 4th Qtr (est)	1156666	30354	38.11
FY 86, Total	4626664	121417	38.11

Source: Silas B. Hays Army Hospital Uniform Chart of
Accounts Reports

TABLE 6: SUMMARY OF FY 88 ESTIMATES FOR FAMILY PRACTICE
VISITS AT PRESIDIO OF MONTEREY CLINIC.

Quarter	Patient Visits	Cost per Patient Visit	Total Costs
First	6,166	\$29.31	\$180,725.46
Second	6,267	\$26.29	\$164,759.43
Third	6,368	\$23.27	\$148,183.36
Fourth	6,449	\$20.25	\$130,997.25
Total	25,270		\$624,665.50

TABLE 7: SUMMARY OF FY 88 ESTIMATES FOR PRIMARY CARE VISITS
AT PRESIDIO OF MONTEREY CLINIC.

Quarter	Patient Visits	Cost per Patient Visit	Total Costs
First	5,381	\$50.54	\$271,955.74
Second	5,513	\$52.27	\$288,164.51
Third	5,646	\$54.00	\$304,884.00
Fourth	5,778	\$55.74	\$322,065.72
Total	22,318		\$1,187,070.00

TABLE 8: BENEFICIARY POPULATION OF FT. ORD COMMAND BY
LOCATION AND CATEGORY.

<u>Beneficiary Category</u>	<u>Fort Ord</u>	<u>POM</u>	<u>Hunter Liggett</u>	<u>Total</u>
Active Duty	17599	4459	576	22634
Retired	9678	0	52	9730
Retired Family Members	14518	0	77	14595
Active Duty Dependents	23679	4752	89	28520
Civilians	3678	2186	134	5998
Total	69152	11397	928	81477

Source: Silas B. Hays Army Hospital Comptroller Department

TABLE 9: CIVILIAN AMBULATORY VISITS PER 1000 POPULATION
BY AGE GROUP.

<u>Age in Years</u>	<u>Contacts/ 1000 Population (mean)</u>
less than 6	4,468
6 to 18	2,706
19 to 24	3,464
25 to 54	4,046
55 to 64	5,138
65 or older	6,029
Total Population (mean)	4,013

Source: National Health Care Expenditures Study Data Preview
16, Contacts With Physicians in Ambulatory Settings: Rates
of Use, Expenditures, and Sources of Payment, U.S.
Department of Health and Human Services, October 1983.

TABLE 10: APPLYING NATIONAL SURVEY USAGE RATES TO FT. ORD
COMMAND BENEFICIARY POPULATION.

<u>Beneficiary Category</u>	<u>Age Categories Applied</u>	<u>Average Rate per person</u>
Active Duty	19 to 54	3.755
Retired	55 and above	5.584
Retired Family Members	55 and above	5.584
Active Duty Dependence	18 and below	3.587
Civilians	19 to 54	3.755

TABLE 11: ESTIMATED PATIENT VISITS APPLYING CIVILIAN
POPULATION USAGE RATES.

Beneficiary Category	Number of Population	Civilian Incident Rate	Expected Patient Visits
Active Duty	4459	3.755	16,744
Retired	0	5.584	0
Retired Family Members	0	5.584	0
Active Duty Dependents	4752	3.587	17,045
Civilians	2186	3.755	8,208
Total	11,397		41,997

TABLE 12: ESTIMATED TOTAL COST OF PRESIDIO OF MONTEREY
PRIMUS CLINIC USING MODEL EQUATION.

Usage Rate	Cost	Visit Costs	Fixed	Total Cost
38,000		\$55.67	\$106,991	\$2,222,451
40,000		\$55.67	\$106,991	\$2,333,791
42,000		\$55.67	\$106.991	\$2,445,131
44,000		\$55.67	\$106,991	\$2,556,471
46,000		\$55.67	\$106.991	\$2,667,811

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